

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION CONCERNING  
 TRANSMITTAL OF COPY OF INTERNATIONAL  
 PRELIMINARY REPORT ON PATENTABILITY  
 (CHAPTER I OF THE PATENT COOPERATION  
 TREATY)  
 (PCT Rule 44bis.1(c))

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MEWBURN ELLIS LLP

Date of mailing (day/month/year)  
 27 October 2005 (27.10.2005)

Applicant's or agent's file reference  
 NRS6215388

**IMPORTANT NOTICE**

International application No.  
 PCT/GB2004/001455

International filing date (day/month/year)  
 02 April 2004 (02.04.2004)

Priority date (day/month/year)  
 03 April 2003 (03.04.2003)

Applicant

UCL BIOMEDICA PLC et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO  
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Authorized officer

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**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference NRSLP6215388	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/GB2004/001455	International filing date ( <i>day/month/year</i> ) 02 April 2004 (02.04.2004)	Priority date ( <i>day/month/year</i> ) 03 April 2003 (03.04.2003)	
International Patent Classification (IPC) or national classification and IPC 7 A61L 27/38, 27/40			
Applicant UCL BIOMEDICA PLC			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 9 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input checked="" type="checkbox"/>	Box No. II	Priority
<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

Date of issuance of this report 14 October 2005 (14.10.2005)
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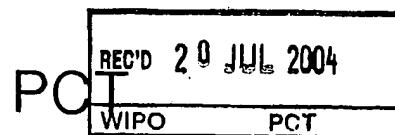
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 740 14 35	Authorized officer  Nora Lindner  Telephone No. +41 22 338 89 65
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220



## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Applicant's or agent's file reference  
see form PCT/ISA/220

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

### FOR FURTHER ACTION

See paragraph 2 below

International application No.  
PCT/GB2004/001455

International filing date (day/month/year)  
02.04.2004

Priority date (day/month/year)  
03.04.2003

International Patent Classification (IPC) or both national classification and IPC  
A61L27/38, A61L27/40

Applicant  
UCL BIOMEDICA PLC

#### 1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

#### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/GB2004/001455

**Box No. 1 Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material:
    - in written format
    - in computer readable form
  - c. time of filing/furnishing:
    - contained in the international application as filed.
    - filed together with the international application in computer readable form.
    - furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/001455

**Box No. II Priority**

1.  The following document has not been furnished:

- copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
- translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2.  This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/GB2004/001455

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

the entire international application,  
 claims Nos. 26 -30

because:

the said international application, or the said claims Nos. 26-30 relate to the following subject matter which does not require an international preliminary examination (*specify*):

**see separate sheet**

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for the whole application or for said claims Nos. -

the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form  has not been furnished

does not comply with the standard

the computer readable form  has not been furnished

does not comply with the standard

the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/001455

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N) Yes: Claims 1-30  
No: Claims

Inventive step (IS) Yes: Claims  
No: Claims 1-30

Industrial applicability (IA) Yes: Claims 1-25  
No: Claims

## 2. Citations and explanations

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/001455

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. Claims 26-30 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2. Reference is made to the following documents:

D1: US-A-5 756 350 (HUANG DAVID ET AL) 26 May 1998 (1998-05-26)  
D2: US-B-6 174 3331 (KADIYALA SUDHAKAR ET AL) 16 January 2001 (2001-01-16)  
D3: WO 02/47557 A (PEARSON RICHARD ; UNIV NOTTINGHAM (GB); SHAKESHEFF KEVIN (GB)) 20 June 2002 (2002-06-20)  
D4: CHEN Y-S ET AL: "Peripheral nerve regeneration using silicone rubber chambers filled with collagen, laminin and fibronectin" BIOMATERIALS, ELSEVIER SCIENCE PUBLISHERS BV., BARKING, GB, vol. 21, no. 15, August 2000 (2000-08), pages 1541-1547, XP004204628 ISSN: 0142-9612  
D5: US-B-6 171 6101 (VACANTI CHARLES A ET AL) 9 January 2001 (2001-01-09)  
D6: HENTZ V R ET AL: "The nerve gap dilemma: a comparison of nerves repaired end to end under tension with nerve grafts in a primate model." THE JOURNAL OF HAND SURGERY. MAY 1993, vol. 18, no. 3, May 1993 (1993-05), pages 417-425, XP009033626 ISSN: 0363-5023

If not indicated otherwise the relevant passages are those mentioned in the search report.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/001455

Document D1 discloses an oriented tissue equivalent obtained by growing cells in a collagen gel. The axis of contraction of the cells is defined by two spaced structures.

Document D2 discloses an implant for repairing a tissue comprising load bearing structures and a gel matrix, e.g. collagen, with cells seeded therein, the cells having contracted the gel in a given direction.

Document D3 discloses a guide for nerve regeneration comprising a tubular conduit filled with a hydrogel like collagen, fibrin or agarose.

Document D4 discloses a guide for nerve regeneration comprising a silicone tube filled with collagen, laminin and fibronectin.

Document D5 discloses a tissue regeneration device, e.g. for spinal cord, comprising a permeable support structure, e.g. a cylinder, filled with hydrogel and tissue precursor cells, e.g. fibroblasts.

Document D6 is a study comparing the nerve regeneration under tension with nerve grafts.

**3. Novelty (Art. 33(1)(2) PCT):**

- 3.1 None of the documents of the prior art discloses a tissue growth guide as claimed in claim 1. The subject-matter of claim 1 is thus new.
- 3.2 None of the documents of the prior art discloses a method for making tissue growth guide as claimed in claim 23. Claim 23 is thus new.
- 3.3 None of the documents of the prior art discloses a the use of a tissue growth guide according to claim 1 for repairing tissue. Claim 29 is thus new.

**4. Inventive step (Art. 33(1)(3) PCT):**

- 4.1 Document D1 (alternatively D2) is the closest prior art and discloses an oriented tissue equivalent obtained by growing cells in a collagen gel wherein the gel is contracted by the cells along an axis defined by two spaced structures. The subject-matter of claim 1 differs in that the guide comprises an outer sheath. The

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/001455

problem to be solved can thus be regarded as to provide an alternative tissue growth guide. Documents D3 and D4 disclose a nerve regeneration device comprising a tubular component filled with hydrogel and biopolymers. It would be obvious to combine the teaching of D1 with D3 and D4 in order to solve the problem. Consequently, an inventive step is not acknowledged for claim 1.

- 4.2 Document D1 discloses that the cells align along a defined axis defined by two fixed posts (see D1 col6 l29-44). A skilled man would thus consider to fix the cell-containing hydrogel in order to induce the alignment of the cells and the tension. Claim 23 does thus not involve an inventive step.
- 4.3 It would be obvious in view of D1 combined with D3-D4 to use the guide as claimed in claim 29. Said claim is thus not inventive.
- 4.4 Dependent claims 2-22, 24-28 and 30 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.

5. Industrial applicability (Art. 33(1)(4) PCT):

For the assessment of the present claims 26-30 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.